REMARKS

Applicant has amended claims 23, 31, and 43 to correct minor typographical errors. Applicant notes with appreciation the Office's indication that claims 3, 4, 7, 10, 11, 13, 14, 17, 20, 21, 25, 27, 33, 37, 41, 43, 44, 47, 50, 54, 56, 57, 59, 60, 62, 66, 67, 71, 72, 74, 75, 76, 78, 81, 82, 83, 86, 87, 89, 90, 91, 93, 94, 96, 97, and 98 would be allowable if rewritten in independent format including all of the limitations of the base claim and any intervening claims. In view of the following remarks, Applicant hereby requests further examination and reconsideration of the application, and allowance of claims 1-98.

Pursuant to a telephone interview with Examiner Dung X. Nguyen on October 31, 2003, the Examiner acknowledged that the shortened statutory period for responding to this Office Action dated October 6, 2003 of one month was an error and that the correct shortened statutory period for responding was three months from the mailing date Accordingly, the due date for responding to this Office Action without paying for an extension of time is January 6, 2004.

The Office has objected to claim 23 asserting that it was terminated by "and", claim 31 asserting was terminated by "..", and claim 43 asserting it was terminated by ";". Accordingly, Applicant has amended claim 23 to replace "; and" at the end the claim with a period, has amended claim 31 to eliminate the double period at the end of the claim, and has amended claim 43 to replace the ";" with a period at the end of the claim. In view of these amendments and remarks, the Office is respectfully requested to withdraw the objection to these claims.

The Office has rejected claims 1, 5, 6, 8, 12, 15, 16, 18, 22, 28, 31, 32, 34, 35, 38, 48, 51, 52, 53, 55, 58, 61, 63, 64, 68, 69, 73, 77, 79, and 80 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,065,718 to Attwood (Attwood), has rejected claims 2, 9, 24, 29, 30, 36, 40, 42, 45, 46, 65, 70, 73, 84, 85, 92, 95 under 35 U.S.C. 103(a) as being unpatentable over Attwood, and has rejected claims 23, 26, and 49 under 35 U.S.C. 103(a) as being unpatentable over Attwood further in view of U.S. Patent No. 6,603,821 to Doi (Doi).

The Office asserts that Attwood shows a transmission system in figure 1 utilizing a noisy reference and a noisy information delayed from the reference signal, wherein both signals are the same modulated version (column 1, lines 42-52), combiner 14 to form a

doublet, and transmit the doublet (column 2, lines 62-65 and page 2, lines 13-21 of the specification and a receiving unit (figure 2) for receiving the doublet and extracting information from the doublet (page 2, lines 13-21 of the specification). The Office also asserts that Attwood shows in figure 2 a unit 18 for receiving a doublet and processing 24, 26, 20, 22, 32, 36, which extracts the information applied to the doublet prior to transmission (page 2, lines 13-21 of the specification). The Office asserts that Attwood does not show the encoder to perform modulated functions in the transmission system, but that an encoder to perform modulated functions in the transmission system is very well known in the art.

Neither Attwood nor Doi, alone or in combination, teach or suggest, "a transmission system which applies one of a plurality of time scales . . . to one of a pair of substantially matched base signals . . . a receiving system which . . . extracts information from the doublet based on the one of the plurality of time scales . . ." as recited in claim 1, "applying one of a plurality of time scales . . . to one of a pair of substantially matched base signals . . . combining the time scaled and time delayed base signal with the other one of the pair of base signals to form a doublet" as recited in claim 12, "a transmission system which applies one of a plurality of time scales to one of a pair of substantially matched base signals . . . a receiving system which . . . extracts information from the doublet based on the one of the plurality of time scales which was applied" as recited in claim 22, "applying one of a plurality of time scales to one of a pair of substantially matched base signals . . . combining the time scaled base signal with the other one of the pair of base signals to form a doublet . . extracting information from the doublet based on the one of the plurality of time scales which was applied" as recited in claim 32, "an encoding system which applies one of a plurality of time scales to one of a pair of substantially matched base signals . . .a combiner which combines the time scaled base signal with the other one of the pair of base signals to form a doublet" as recited in claim 42, "applying one of a plurality of time scales to one of a pair of substantially matched base signals . . combining the time scaled with the other one of the pair of base signals to form a doublet with the information" as recited in claim 48, "a processing system which extracts the information from the doublet based on one of a plurality of time scales which was applied to the doublet prior to transmission" as recited in claim 55, "extracting information from the doublet based on one of a plurality of time scales which was applied to the doublet" as recited in claim 61, "a transmission system embeds communication information by applying one of a plurality of time scales . . . to one of a pair of substantially

matched base signals, combines the time scaled and time delayed base signal with the other one of the pair of base signals to form a doublet . . . a receiving system which . . . extracts information from the doublet based on the one of the plurality of time scales and the one of the plurality of time delays which were applied" as recited in claim 69, "applying one of a plurality of time scales and . . . to one of a pair of substantially matched base signals . . . combining the time scaled and time delayed base signal with the other one of the pair of base signals to form a doublet . . . extracting the communication information from the doublet based on the one of the plurality of time scales and on the one of the plurality of time delays which were applied" as recited in claim 77, "a transmission system which applies one of a plurality of time scales and . . . to one of a pair of substantially matched base signals, combines the time scaled and time delayed base signal with the other one of the pair of base signals to form a doublet . . . a receiving system which receives the doublet and extracts the imaging information from the doublet based on the one of the plurality of time scales and the one of the plurality of time delays which were applied" as recited in claim 84, or "applying one of a plurality of time scales and . . . to one of a pair of substantially matched base signals . . . combining the time scaled and time delayed base signal with the other one of the pair of base signals to form a doublet . . . extracting the imaging information from the doublet based on the one of the plurality of time scales and on the one of the plurality of time delays which were applied" as recited in claim 92.

The Office's attention is respectfully to col. 1, lines 42-45 in Attwood which states, ". . . by utilizing a noisy reference signal transmitted in combination with a time delay modulated version of the same noisy signal" and to FIGS. 1 and 2 in Attwood which illustrate a transmitter 2 with a delay 10 and a receiver 4 with delay circuit s 24 and 26. Additionally, the Office's attention is directed to col. 2, lines line 60-63 in Attwood which states, "Reference signal $r(t)$, is fed to delay circuit 10 which provides a time delay, t_m. The output of delay circuit 10 is a delayed signal, $s(t)$" , to col. 3, lines 31-32 and 66-68 which states, "The combined signal is applied to one input of multipliers 20, 22 and to delay circuits 24,26 . . . The input signal is fed directly to multiplier 22 and to delay circuit 26 which delays the input signal by time t_1", and to col. 4, lines 24-25 which states, "Delay circuit 24 provides a fixed delay exactly equal to delay t_o of transmitter 2." Accordingly, Attwood discloses a communication system where the information signal is delayed from the reference signal as a function of information modulation, but does not teach or suggest any time scaling.

The Office's attention is respectfully directed to page 2, line 22 to page 3, line 4, in the above-identified patent application which discusses Attwood and states, "One example of a prior system which uses one or more of the techniques described above is disclosed in U.S. Patent No. 4,065,718 to Attwood which is herein incorporated by reference. This prior system uses time differential modulation. One of the most significant problems with this system is its sensitivity to multipath degradations and its ability to be detected and exploited by eavesdroppers. The applied time-delay offset can be easily "realized" by the propagating environment (as a multipath) causing a false detection. Additionally, this modulation is easily detected by an eavesdropping listener (with a delay element in their processor). Furthermore, when this prior art modulator/demodulator is employed for probing or imaging as in radar, navigation, sonar and/or identification-friend-or-foe (IFF), the range/angle/velocity resolution performance is very poor. As a result, the problems of non-robustness, insecurity and poor performance limit the practical utility of this system." As discussed at page 9, line 29 to page 10, line 3, in the above-identified patent application, "The present invention's added parameter of time-scale offset is easy and efficient to implement, and it adds a whole new dimension for embedding/extracting information and maintaining signal security. The time-scale offset also enables controllable spatial resolution for enhanced performance in extracting environmental information. By simultaneously employing multiple time-scale offsets in the same transmission, the system can simultaneously achieve extreme robustness and high resolution in range, angles and velocity."

The Office has also cited Doi for disclosing units to perform synchronized recovering in the rejection of claims 23, 26, and 49 under 35 U.S.C. 103(a). Like Attwood, Doi, alone or in combination with Attwood, does not teach or suggest time scaling as claimed.

Therefore, in view of the foregoing remarks, the Office is respectfully requested to reconsider and withdraw the rejection of claims 1, 12, 22, 32, 42, 48, 55, 61, 69, 77, 84, and 92. Since claims 2-11 depend from and contain the limitations of claim 1, claims 13-21 depend from and contain the limitations of claim 12, claims 23-31 depend from and contain the limitations of claim 22, claims 33-41 depend from and contain the limitations of claim 32, claims 43-47 depend from and contain the limitations of claim 42, claims 49-54 depend from and contain the limitations of claim 48, claims 56-60 depend from and contain

the limitations of claim 55, claims 62-68 depend from and contain the limitations of claim 61, claims 70-76 depend from and contain the limitations of claim 69, claims 78-83 depend from and contain the limitations of claim 77, claims 85-91 depend from and contain the limitations of claim 84, and claims 93-98 depend from and contain the limitations of claim 92, they are distinguishable over the cited references and patentable in the same manner as claims 1, 12, 22, 32, 42, 48, 55, 61, 69, 77, 84, and 92.

The Office has objected to claims 3, 4, 7, 10, 11, 13, 14, 17, 20, 21, 25, 27, 33, 37, 41, 43, 44, 47, 50, 54, 56, 57, 59, 60, 62, 66, 67, 71, 72, 74, 75, 76, 78, 81, 82, 83, 86, 87, 89, 90, 91, 93, 94, 96, 97, and 98 as being dependent upon a rejected base claim, but would be allowable if rewritten in independent format including all of the limitations of the base claim and any intervening claims. In view of the foregoing remarks with respect to independent claims 1, 12, 22, 32, 42, 48, 55, 61, 69, 77, 84, and 92, no further amendment of these claims is believed to be necessary and these claims are believed to be in condition for allowance and the Office is respectfully requested to reconsider and withdraw the objection.

In view of all of the foregoing, applicant submits that this case is in condition for allowance and such allowance is earnestly solicited.

Respectfully submitted,

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